COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Valley Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Virginia Electric & Power Company aka Dominion
Route 656 Fluvanna County, Virginia
Permit No. VRO40199

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 72 and 9 VAC 5 Chapter 80, Virginia Electric & Power Company has applied for an Acid Rain Operating Permit for its Bremo Power Station electric generation facility. The Department has reviewed the application and has prepared a draft Acid Rain Operating Permit.

Engineer/Permit Contact:_____ Date: 4/21/04

Air Permit Manager:_____ Date: 4/26/04

Deputy Regional Director:_____ Date: 4/27/04

FACILITY INFORMATION

Permittee
Virginia Electric & Power Company aka Dominion
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Facility
Bremo Power Station
1038 Bremo Road
Bremo Bluff Virginia 23022

Plant ID No. 51-065-0001

SOURCE DESCRIPTION

Facility Description: SIC Code 4911 (Electric Power Generation) and NAISC ID Code 221112

The Bremo Power Station is a coal-fired electric power generating facility located in Fluvanna County, Virginia. The facility includes two dry bottom wall-fired Babcock and Wilcox boilers rated at 912 and 1,699 million Btu per hour design heat input capacity. Particulate emissions from these boilers are controlled by electrostatic precipitators. The facility also includes a coal handling operation.

The facility is a federal major source of PM-10, sulfur dioxide, nitrogen oxides, carbon monoxide, hydrogen fluoride, hydrochloric acid and total HAPs (combined). The source is located in an attainment area for all pollutants and is a PSD major source. The facility is also subject to the NO_x Budget Trading Program regulations (9 VAC 5 Chapter 140) and the Title IV Acid Rain regulations (9 VAC 5 Chapter 80, Article 3) and was issued a Phase II acid rain permit effective January 1, 2003. The coal-handling portion of the facility was permitted under a minor NSR permit issued on February 26, 2002

COMPLIANCE STATUS

The facility is inspected once a year. The facility was last inspected on July 23, 2003 and is currently considered in compliance.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date **
Fuel Burning Equipment							
ES-1	EP-1	Kewanee Package Boiler, Model #H3s-200-02-250 Distillate oil/propane-fired (1991)	8.693 mmBtu/hr	-	-	-	-
ES-2	EP-2	Solar Combustion Turbine Model T-351N-21 Kerosene/distillate oil-fired (1967)	5.24 mmBtu/hr	-	-	-	-
ES-3	EP-3	Babcock and Wilcox Boiler (Unit 3) Pulverized coal-fired (distillate oil and used oil primarily used for start-up and flame stabilization) (1950)	912 mmBtu/hr (coal) 504 mmBtu/hr (oil)	Western Precipitator Type R	ESP-3	PM PM-10	-
ES-4	EP-4	Babcock and Wilcox Boiler voluntarily retrofitted with low NO_x burners in 1999 (Unit 4) Pulverized coal-fired (distillate oil and used oil primarily used for start-up and flame stabilization) (1958)	1699 mmBtu/hr (coal) 504 mmBtu/hr (oil)	Western Precipitator Type R	ESP-4	PM PM-10	-

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date **
Coal Handling System							
ES-5a	ES-5	Coal Handling – Railcar Unloading (1986) NSPS Subpart Y	550 tons/hr	Enclosure	-	PM PM-10	2/26/02
ES-5b	ES-5	Coal Handling – Crushing (1986) NSPS Subpart Y	550 tons/hr	Enclosure	-	PM PM-10	2/26/02
ES-5c	ES-5	Coal Handling – Conveying System (1986) NSPS Subpart Y	550 tons/hr	Enclosure	-	PM PM-10	2/26/02
ES-5d	ES-5	Coal Handling – Storage Piles	-	-	-	PM PM-10	2/26/02

*The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.

**Minor New Source Review permit dated 2/26/02 is for the installation and operation of a coal handling system for the power plant.

EMISSIONS INVENTORY

Annual emissions summarized in the following table are derived in part from the 2002 CEDS emission report and DEQ spreadsheets. A copy of the report and spreadsheets are attached as Attachment A.

2002 Pollutant Emissions (Plantwide Total)	
Pollutant	Tons Emitted
Criteria Pollutants	
PM-10	70.37
VOC	20.23
NO_x	4,719.80
SO_2	13,456.70
CO	168.96
Lead (also a HAP)	0.66
Hazardous Air Pollutants (HAPs)	
Hydrogen Fluoride	50.52
Hydrochloric Acid	404.16
Arsenic	0.72
Beryllium	0.06
Cadmium	0.09
Chromium Compounds	3.38
Manganese Compounds	2.95
Mercury	0.14
Nickel Compounds	2.04
POM	0.02

EMISSION UNIT APPLICABLE REQUIREMENTS

Fuel Burning Equipment Units: ES-1, ES-2, ES-3, and ES-4

Limitations

The following applicable limitations are state and federal requirements from the Phase II acid rain permit effective January 1, 2003, which is incorporated by reference into the operating permit. A copy of the acid rain permit is enclosed as Attachment B.

SO_2 allowance allocations for the years 2003, 2004, 2005, 2006, and 2007, are as follows:

ES-3 (Unit 3) 2028 tons
ES-4 (Unit 4) 5158 tons

NO_x limits for calendar years 2003 through 2007 under their NO_x emission averaging plan, are as follows:

ES-3 (Unit 3)	0.80 lb/mmBTU
ES-4 (Unit 4)	0.45 lb/mmBTU

The NO_x limit defaults to 0.46 lb/mmBTU for each unit if the system fails to meet the annual system-wide averaging plan or if the boilers are removed from the system-wide averaging plan.

ES-3 (Unit 3) and ES-4 (Unit 4) also meet the definition of a NO_x Budget Unit and are subject to the NO_x Budget emission limitations under 9 VAC 5-140-40. Section IX of the Acid Rain Operating Permit includes the NO_x Budget Trading Program Requirements.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-80-490, Acid Rain Operating Permits – Units ES-3 and ES-4 are subject to the acid rain requirements that specify air pollution control equipment, approved fuels, fuel certification, and operation and maintenance of boilers and control equipment.

9 VAC 5-40-900, Emission Standards for Fuel Burning Equipment – Standard for Particulate Matter - Units ES-2, ES-3, and ES-4 are considered a fuel burning installation (all fuel burning equipment units within a stationary source in operation prior to October 5, 1979). Allowable emissions for the installation, in pounds of particulate per million BTU input, are calculated using the following formula:

$$\text{Maximum Allowable Emission Ration (E)} = 1.0906H^{-0.2594}$$

where H is the total capacity in millions of BTU per hour of the installation. Therefore:

$$E = 1.0906 \times (5.24 + 912 + 1699)^{-0.2594} = 0.1416 \text{ lb/mmBTU input}$$

Allowable particulate emissions are the product of the emission ration E and the total heat input of the installation in mmBTU/hr. Therefore:

$$\text{Maximum Allowable Emissions} = 0.1416 \times 2616.24 = 370.46 \text{ lb/hr}$$

This rule also applies to Unit ES-1. However, because this unit was installed after October 5, 1979, the unit is not part of the fuel burning installation and its allowable particulate emissions are calculated separately. The maximum allowable emission ratio for units with a capacity of less than 10 million BTU/hr is 0.6 pounds of particulate per million BTU input. Therefore:

Maximum Allowable Emissions = 0.6 x 8.693 = 5.22 lbs/hr

9 VAC 5-40-910, Emission Allocation System - This rule allows the facility to proportion the allowable particulate emissions among the units in the fuel burning installation (all fuel burning equipment units within a stationary source in operation prior to October 5, 1979). In a letter dated December 9, 2003, VEPCO requested a change to their initial particulate allocation because some of the units had been removed or replaced. (See Attachment C) In a letter dated January 7, 2004, DEQ approved a new particulate allocation for VEPCO's Bremo Power Station. The effective date of the new allocation is January 6, 2004. A copy of the particulate emission allocation is included as Attachment D.

The particulate emissions are allocated as follows:

ES-2	2.00 lbs/hr
ES-3	128.51 lbs/hr
ES-4	239.95 lbs/hr

9 VAC 5-40-930, Emission Standards for Fuel Burning Equipment – Standard for Sulfur Dioxide – Allowable emissions, in pounds of sulfur dioxide per hour, are calculated using the following formula:

Maximum Allowable Emissions (S) = 2.64K

where K is the allowable heat input at total capacity in mm BTU/hr. Therefore

ES-1 S = 2.64 x 8.693 = 22.95 lbs/hr

ES-2 S = 2.64 x 5.24 = 13.83 lbs/hr

ES-3 S = 2.64 x 912 = 2407.68 lbs/hr

ES-4 S = 2.64 x 1699 = 4485.36 lbs/hr

9 VAC 5-50-80, Standard for Visible Emissions – Visible emission limit for new and modified units shall not exceed 20% opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity applies to ES-1 (installed in 1991).

9 VAC 5-40-80 and 9 VAC 5-40-940, Standard for Visible Emissions – Visible emission limit existing units shall not exceed 20% opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 60% opacity applies to fuel burning units ES-2, ES-3, and ES-4.

Monitoring

This permit includes requirements for monitoring to satisfy 40 CFR Parts 70 and 75.

Units ES-3 and ES-4

9 VAC 5-40-1000 and 40 CFR 75.10 require units ES-3 and ES-4 to install, operate, calibrate and maintain continuous monitors for the purpose of monitoring opacity, sulfur dioxide emissions, and nitrogen oxide emissions.

The permit requires electrostatic precipitators (ESP) for control of particulate emissions from the boiler units ES-3 and ES-4. Properly operating ESP's should be able to comply with the opacity limit (20%) and the particulate limits of 128.51 lbs/hr for unit ES-3 and 239.95 lbs/hr for unit ES-4.

A properly operating ESP is capable of a control efficiency of greater than 99% for PM. Emissions were estimated using the most current AP-42 emission factors (filterable and condensable), a coal Btu value of 11,000 Btu/lb, an ash content of 15% and a control efficiency of 99%. Even with these worst case values, the PM emission estimate for unit ES-3 is 65.16 lbs/hr. For unit ES-4, the PM emission estimate is 121.26 lbs/hr. All of these estimates are well below the allowable PM limit of 128.51 lbs/hr for unit ES-3 and 239.95 lbs/hr for unit ES-4. Calculations have been included in Attachment E to demonstrate that the emission limits can be met for ES-3 and ES-4.

Initial particulate testing is required for Units ES-3 and ES-4 to verify compliance with the particulate limits. Initial testing is required by December 31, 2004. Subsequent testing is based on the results of the initial tests. If the initial test results are less than 50% of the emission limit, then no additional tests are required for the term of the permit. For results between 50 and 80 percent of the allowable limit, testing is required every 30 months. For results greater than 80 percent of the allowable limit, testing is required annually.

Monitoring is required for the two ESP units to ensure the control devices are operating properly. These include monitoring primary and secondary voltage, primary and secondary current, and the spark rate for each field. The operating condition of each field is to be observed at least once per 12-hour shift. Proper operation of the ESP units will ensure continued compliance with the particulate limits and the opacity standards.

Additionally, daily review of the recorded opacity data is required. Boiler and ESP operating parameters are to be checked if opacity approaches the applicable standard. If boilers or ESPs are not operating within normal parameters, adjustments shall be made to return the unit(s) to proper operation. Opacity data shall be reviewed again to confirm proper operations.

Units ES-3 and ES-4 should be able to comply with the sulfur dioxide (SO_2) limits. Emissions

were estimated using the most current AP-42 emission factors, a coal Btu value of 11,000 Btu/lb, and a sulfur content of 1%. The SO_2 emission estimate for unit ES-3 is 1577.0 lbs/hr. For unit ES-4, the SO_2 emission estimate is 2934.74 lbs/hr. These values are well below the respective emission limits of 2407.68 lbs/hr for unit ES-3 and 4485.36 lbs/hr for unit ES-4.

To verify compliance with the hourly PM emission limits for units ES-3 and ES-4, the permittee is required to calculate daily emissions on a monthly basis. Until PM testing has been completed, AP-42 or other approved emission factors will be used to calculate the emissions. Once particulate testing is completed, emission factors derived from the stack tests will be used for the particulate emission calculations. CEM data will be used to verify hourly SO_2 emissions.

Units ES-1 and ES-2

Actual emissions from the operation of units ES-1 and ES-2 will be calculated using the following equation:

$$E = F \times O$$

Where:
E = Emission rate (lb/time period)
F = Pollutant specific emission factors as follows:

ES-1

	lpg	distillate oil
PM/PM-10	0.6 lb/1000 gal	3.3 lb/1000 gal
SO_2	1.5 lb/1000 gal	71 lb/1000 gal

ES-2

PM/PM-10	0.31 lb/mmBTU
SO_2	0.29 lb/mmBTU

Calculations have been included in Attachment E to demonstrate that the emission limits can be met for ES-1 and ES-2. Monthly inspections of units ES-1 and ES-2 are required when burning distillate oil. If during the inspection, visible emissions are observed, an EPA, Method 9 visible emission evaluation is required.

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include the annual fuel throughputs of coal and distillate oil, fuel supplier certifications, DEQ-approved emission factors and equations to demonstrate compliance with emission limits for ES-1 and ES-2, daily emissions calculated monthly for PM for units ES-

3 and ES-4, hours of operation and visible emissions observation (VEO) results for units ES-1 and ES-2, COM and CEM records, ESP monitoring records, operator training and maintenance records, and performance tests and VEEs.

Testing

Particulate testing for units ES-3 and ES-4 are required by December 31, 2004 to demonstrate compliance with the particulate emission limits contained in the permit. Subsequent testing is based on the test results of the initial test. If the initial test result is less than or equal to 50% of the emission limit, then no additional testing is required for the rest of the permit term. If the initial test results are between 50% and 80% of the emission limit, then testing is required every 30 months. If the initial test result is greater than or equal to 80% of the emission limit, annual testing is required. A table of test methods has been included in the permit if additional testing beyond what is currently specified is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

EMISSION UNIT APPLICABLE REQUIREMENTS

Coal Handling System: ES-5

Limitations

The following limitations are state BACT requirements from the minor NSR permit issued on February 26, 2002. Please note that the condition numbers are from the 2002 permit; a copy of the permit is enclosed as Attachment F.

Condition 3:	Requires railcar unloading (ES-5a) to be controlled by partial enclosure.
Condition 4:	Requires crushing and conveying (ES-5b & ES-5c) to be controlled by enclosures.
Condition 5:	Fugitive dust control requirements
Condition 6:	Coal throughput limit
Condition 8:	Visible emission limit
Condition 7:	Particulate emission limits for inventory purposes
Condition 17:	Requires maintenance schedule, inventory of spare parts, operating procedures, and operator training

Monitoring and Recordkeeping

The permit includes requirements for monitoring and recordkeeping necessary to demonstrate compliance with the permit.

The permittee is required to perform a weekly inspection of the fugitive dust control system for the coal handling operation, perform a daily visual survey of the coal handling activities for sources of visible emissions, and to perform a VEE if visible emissions are observed. As long as the facility maintains the enclosures required by the permit, the particulate emission limits should be met. Required records include, annual coal processed, daily logs of the visual survey, visible emissions evaluations, and maintenance and operator training.

Testing

The permit requires EPA Method 9 testing when visible emissions are observed from the coal handling equipment. A table of test methods has been included in the permit if additional testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

No specific reporting has been included in the permit for the coal handling processes.

Streamlined Requirements

The following conditions in the NSR permit have not been included for the reasons provided:

Condition 9 requiring the coal handling equipment to be operated in compliance with requirements under 40 CFR 60, Subpart Y, except as specified in the minor NSR permit, has not been included. The required 40 CR 60, Subpart Y requirements have been included in the operating permit.

Conditions 10 and 13 requiring an initial VEE and initial notifications have not been included because these conditions have already been completed.

The particulate emission limits contained in the permit are more stringent than the Virginia Administrative Code Standard for particulate matter in 9 VAC 5-40-260. Therefore, only the more stringent particulate emission limits were included in the permit.

The visible emission limits and fugitive dust requirements contained in the permit are more stringent than the Virginia Administrative Code Standard for visible emission in 9 VAC 5-40-1990 and for fugitive dust/emissions in 9 VAC 5-40-2000. Therefore, only the more

stringent limits were included in the permit.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 72 and 9 VAC 5-80-490, that apply to all acid rain operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, including those caused by upsets, within one business day.

TITLE IV (PHASE II ACID RAIN) PERMIT ALLOWANCES AND REQUIREMENTS

The Phase II permit is incorporated into the permit by reference, including the NO_x Compliance Plan and the NO_x Averaging Plan.

NO_X BUDGET TRADING PROGRAM REQUIREMENTS

The Bremo Power Station is subject to the NO_x Allowance Budget Trading Program (9 VAC 5-140-10) regulations and the facility submitted a permit application to EPA and DEQ dated October 30, 2002. These regulations affect units ES-3 and ES-4 and have been incorporated into the acid rain operating permit.

STATE ONLY APPLICABLE REQUIREMENTS

None identified by the applicant.

FUTURE APPLICABLE REQUIREMENTS

Compliance Assurance Monitoring (CAM)
Because this is the initial Title 3 operating permit for this facility and because the application was administratively complete prior to April 20, 1998 (March 11, 1998), CAM does not apply. CAM will apply upon permit renewal.

The National Emission Standards for Hazardous Air Pollutants for Utility boilers will apply to this facility when promulgated.

INAPPLICABLE REQUIREMENTS

40 CFR 60, Subpart D, 40 CFR 60, Subpart Da, and 40 CFR 60, Subpart Db have been specifically identified as being not applicable to units ES-3 and ES-4 as construction of the boilers took place prior to the applicability dates of these standards of performance (August 17, 1971, September 18, 1978, and June 19, 1984, respectively.) 40 CFR 60, Subpart Dc was identified as not being applicable for Unit ES-1 as this unit is less than 10 million BTU/hr heat

input and 40 CFR 60, Subpart GG was identified as not being applicable to Unit ES-2 because the unit is less than 10 million BTU/hr heat input.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-490.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
IS-1	Lube Oil Systems/Waste Oil Systems/Hydraulic Oil Systems	9 VAC 5-80-720B	VOC	
IS-2	215,000 Gallon #2 Fuel Oil Tank	9 VAC 5-80-720B	VOC	
IS-3	275 Gallon Gasoline Dispensing Station & Tank	9 VAC 5-80-720B	VOC	
IS-4	500 Gallon Kerosene Tank	9 VAC 5-80-720B	VOC	
IS-5	Antifreeze Usage on Coal Conveyors	9 VAC 5-80-720B	VOC	
IS-6	Wendon (bridging agent) Usage on Coal	9 VAC 5-80-720B	VOC	
IS-7	Flyash Handling System	9 VAC 5-80-720B	PM-10	
IS-8	Gravel Roads	9 VAC 5-80-720B	PM-10	
IS-9	Sand Blasters (1)	9 VAC 5-80-720B	PM-10	
IS-10	Sewage Treatment	9 VAC 5-80-720B	VOC	
IS-11	Coal Sampling Systems (as received & as fired)	9 VAC 5-80-720B	PM-10	
IS-12	Ash Storage Ponds	9 VAC 5-80-720B	PM-10	
IS-13	Diesel Fire Pump	9 VAC 5-80-720C		150 HP
IS-14	Lime Slurry Tank	9 VAC 5-80-720B	PM-10	
IS-15	275 Gallon Fire Pump Diesel Tank	9 VAC-5-80-720B	VOC	
IS-16	10,000 Gallon Coal Yard Diesel Tank	9 VAC-5-80-720B	VOC	

[1]The citation criteria for insignificant activities are as follows:
9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
9 VAC 5-80-720 B - Insignificant due to emission levels
9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the permit application are suitable for public review.

OTHER CONSIDERATIONS

On March 11, 2004, David Heacock was made the Designated Representative (USEPA Acid Rain program) and the Account Authorized Representative (USEPA NO_x Budget Program) for the Bremo Power Station. This administrative change was incorporated into the final permit.

PUBLIC PARTICIPATION

A public notice appeared in the Charlottesville Daily Progress on March 4, 2004 announcing a 30-day public comment period for this permit. The public comment period ended on April 5, 2004, and EPA's comment period ended on April 20, 2004 (concurrent review of the permit as both draft and proposed).